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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,430	07/10/2006	Peter Glanville Chapman	HAC-044	9320

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EXAMINER	
BELYAEV, YANA	

ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,430	CHAPMAN ET AL.	
	Examiner	Art Unit	
	YANA BELYAEV	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/5/07, 9/11/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claim 18 (which was canceled in the amendment submitted along with the election) is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 21 July 2009.

Specification

1. The disclosure is objected to because of the following informalities: the examiner believes the applicant made a typo on page 7, line 27 referring to the downstream expansion plug as element 36, instead of element 26. Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Publication WO 97/06940 (Chapman hereinafter).

Regarding claim 1, Chapman discloses a continuous process for producing oriented plastic tube comprising the steps of extrusion of a tube to an initial extruded diameter (page 1, line 19), temperature conditioning (page 1, line 21), diametrical expansion (page 1, line 24) and cooling (page 1, line 30), characterized in that the process further includes the step of adjusting the diameter of the extruded tube to an adjusted diameter by means of a variable diameter calibrator located between said extrusion and temperature conditioning steps (page 3, line 29 and Figure 1, element 13), wherein the sizing sleeve is the variable diameter calibrator.

Chapman does not explicitly state that the variable diameter calibrator controls a circumferential draw ratio of said oriented tube produced. However, the applicant defines the circumferential draw ratio as being the ratio of the final pipe mid-wall circumference to the mid-wall circumference of the extruded tube (page 1, paragraph 7). The variable diameter calibrator adjusts the diameter of the extruded tube, thus it inherently controls the circumferential draw ratio of the oriented tube produced.

Regarding claims 2-4, Chapman discloses that the diametrical expansion step comprises application of an internal pressure, specifically an expandable plug with maintains pressure within the expansion zone (page 5, lines 22-24 and Figure 1, element 26), wherein element 20, Figure 1 represents the expansion zone.

Chapman further discloses that the internal pressure is limited at an upstream end by an upstream plug (page 4, lines 10-12), wherein the examiner takes the position that the pushing of

the tube tightly onto the upstream plug, a seal is created which maintains the pressure in the expansion zone, thereby the upstream plug limits the internal pressure at the upstream end.

Regarding claim 5, Chapman discloses a continuous process for producing oriented plastic tube comprising the steps of extrusion of a tube to an initial extruded diameter, adjusting the diameter of the extruded tube to a first adjusted diameter by means of a variable diameter calibrator, temperature conditioning, and diametrical expansion and cooling to produce oriented tube having a first circumferential draw ratio (see claim 1).

While Chapman does not explicitly state that the extruded tube has an initial wall thickness, that is inherent since the extruded tube is a tube, thus it must have an initial wall thickness.

Furthermore, Chapman discloses varying the adjusted diameter set by the variable diameter calibrator while said extrusion step continues (page 5, lines 22-24), wherein the examiner interprets inflating the downstream plug as varying the adjusted diameter. While Chapman does not explicitly disclose that a second circumferential draw ratio is produced, since the diameter of the tube changes (see definition of draw ratio in claim 1), a second circumferential draw ratio is inherently produced.

Regarding claims 6-7, Chapman discloses the step of adjusting the extruded tube initial wall thickness, so as to alter the wall thickness of the oriented tube produced by the continuous process (page 4, lines 20-24), wherein Chapman discloses that the step of adjusting the initial wall thickness comprises making the velocity at which the tube is fed into the expansion zone higher than that of the first haul off tractor (page 4, lines 19-24), or alternatively, a separate haul

off means can be added at the downstream end of the temperature conditioning zone to adjust the initial wall thickness (page 4, lines 25-30).

4. Claims 8-12 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman in view of US Patent 6,153,132 (Chapman '132 hereinafter).

Regarding claims 8 and 10, Chapman discloses a continuous process for producing oriented plastic tube comprising the steps of extrusion of a tube to an initial extruded diameter and initial wall thickness, adjusting the diameter of the extruded tube to an adjusted diameter by means of a variable diameter calibrator, temperature conditioning, diametrical expansion and cooling to produce oriented tube having a first circumferential draw ratio and a first wall thickness, varying the extruded tube initial wall thickness (see claim 5).

Chapman does not explicitly disclose making compensatory variation of the adjusted diameter set by the variable diameter calibrator so as to produce oriented tube having a second wall thickness or diameter and said first circumferential draw ratio.

However, Chapman '132, which also discloses a continuous process for producing oriented plastic tubes, discloses that at any time, the sum of the axial draw being introduced in the expansion and pre-expansion zones will be equal to the haul-off ratio and therefore constant (column 4, lines 35-38), wherein the circumferential draw is the axial draw. Chapman '132 further discloses that it is important to both product consistency and the operation of the process itself to control the axial draw (column 4, lines 38-40).

Chapman discloses that achieving controlled axial draw in the tube wall prior to the expansion zone provides several benefits, including the thinning of the tube wall which occurs

due to the axial draw makes the temperature conditioning more efficient so that greater temperature uniformity around the tube wall can be achieved (page 4, lines 33-37 though page 5, lines 1-3).

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have kept the circumferential draw ratio constant, as disclosed by Chapman '132, while adjusting the wall thickness, as disclosed by Chapman. The rationale to do so would have been the motivation to the keep product consistency (column 4, lines 38-40), while also attaining some of the benefits of thinning of the tube wall, including making temperature conditioning more efficient (page 4, lines 33-37 though page 5, lines1-3).

Chapman '132 also discloses expanding the tube in the expansion zone so that the diameter attains a second oriented tube diameter (column 3, lines 66-67).

Thus, it also would have been obvious to one of ordinary skill in the art at the time of the invention to have kept the circumferential draw ratio constant, as disclosed by Chapman '132, while adjusting the tube diameter to a second oriented tube diameter, also as disclosed by Chapman '132. The rationale to do so would have been the motivation to the keep product consistency (column 4, lines 38-40), while achieving the goal of the process namely producing oriented plastic tube (Chapman, abstract).

Regarding claim 9, Chapman discloses that the step of adjusting the extruded tube initial wall thickness, comprises making the velocity at which the tube is fed into the expansion zone higher than that of the first haul off tractor (page 4, lines 19-24), or alternatively, a separate haul off means can be added at the downstream end of the temperature conditioning zone to adjust the initial wall thickness (page 4, lines 25-30).

Regarding claim 11, Chapman discloses further including the step of adjusting the extruded tube initial wall thickness (page 4, lines 20-24).

Regarding claim 12, Chapman discloses including the step of maintaining continuous extrusion of said tube to said initial extruded diameter, but does not disclose that said oriented tube diameter and adjusted diameter are varied.

However, Chapman '132 discloses that the oriented tube diameter and adjusted diameter are varied (column 4, lines 13-20).

It would have been obvious for one of ordinary skill in the art at the time of the invention to have varied the oriented tube diameter and the adjusted diameter, as disclosed by Chapman '132, since this allows for optimization of the final diameter of the tube (column 4, line 15).

Regarding claim 15-17, Chapman discloses a continuous process for producing oriented plastic tube comprising the steps of extrusion of a tube to an initial extruded diameter, adjusting the diameter of the extruded tube to an operating adjusted diameter by means of a variable diameter calibrator, temperature conditioning, diametrical expansion and cooling to produce oriented tube having a circumferential draw ratio (see claim 5).

Chapman does not disclose a process start- up step in which said diametrical expansion step is not performed and said extruded tube is set by the variable diameter calibrator to a start-up adjusted diameter which is greater than said operating adjusted diameter, and subsequently resetting the variable diameter calibrator to said operating adjusted diameter.

However, Chapman '132 discloses that the extruded tube is set by the variable diameter calibrator to a start-up adjusted diameter which is greater than said operating adjusted diameter, and subsequently resetting the variable diameter calibrator to said operating adjusted diameter,

wherein said step of subsequently resetting the variable diameter calibrator to said operating adjusted diameter is performed prior to expanding said expandable plug to cause said diametrical expansion of the tube (column 4, lines 9-12).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have reset the variable diameter calibrator to said operating adjusted diameter in order to enter the sizing sleeve (column 4, line 12).

Chapman '132 further discloses that the diametrical expansion step comprises application of an internal pressure to the tube within an expansion zone limited at a downstream end by an expandable plug to maintain pressure within the expansion zone, and wherein in said start-up step said expandable plug is in an unexpanded state and said start-up adjusted diameter is sufficiently large for the tube to pass over said expandable plug in its unexpanded state (column 4, lines 40-44).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have made the tube sufficiently large to pass over the expandable plug in its unexpanded state, in order for expansion to occur (column 4, lines 1-8).

5. Claim 13 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman, and further in view of DE 19843340 (Ulrich hereinafter).

US Patent 7,335,010 used for purposes of translation and all references correspond to US Patent 7,335,010.

Regarding claims 13 and 14, Chapman does not disclose a step of varying the oriented tube diameter comprises replacing a downstream tube sizing apparatus while said extrusion step

continues and is also silent to that the step of varying the oriented tube diameter further comprises replacing a diametrical expansion plug causing said diametrical expansion of the tube.

However Ulrich discloses an adjustable tube sizing apparatus (abstract), wherein the calibrating tools are the adjustable tube sizing apparatus. Since the calibration tools are adjustable to different outside diameters of pipes (column 3, lines 52-55), it is equivalent to replacing the downstream tube sizing apparatus, as both aim to achieve the same thing, namely allowing the expansion of the tube to a desired size.

It would have been obvious for one of ordinary skill in the art at the time of the invention to have replaced a downstream tube sizing apparatus in order to allow for adjustable tube sizing (column 3, lines 52-55). Similarly, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace a diametrical expansion plug in order to allow for adjustable tube sizing (column 3, lines 52-55).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YANA BELYAEV whose telephone number is (571)270-7662. The examiner can normally be reached on M-Th 8:30am - 6pm; F 8:30 am- 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. B./
Examiner, Art Unit 1791

/STEVEN P. GRIFFIN/
Supervisory Patent Examiner, Art Unit 1791